

536,859

(12) INTERNATIONAL APPLICATION PUBLISHED UNDER THE PATENT COOPERATION TREATY (PCT)

(19) World Intellectual Property  
Organization  
International Bureau



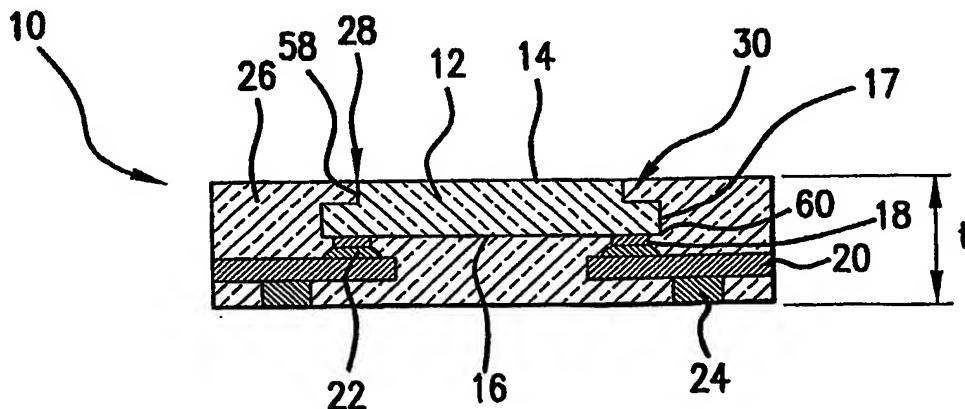
(43) International Publication Date  
24 June 2004 (24.06.2004)

PCT

(10) International Publication Number  
WO 2004/053931 A2

- (51) International Patent Classification<sup>7</sup>: H01L (74) Agent: OLSON, Timothy, J.; Wiggin & Dana LLP, One Century Tower, New Haven, CT 06508-1832 (US).
- (21) International Application Number: PCT/US2003/038048 (81) Designated States (*national*): AE, AG, AL, AM, AT, AU, AZ, BA, BB, BG, BR, BY, BZ, CA, CH, CN, CO, CR, CU, CZ, DE, DK, DM, DZ, EC, EE, EG, ES, FI, GB, GD, GE, GH, GM, HR, HU, ID, IL, IN, IS, JP, KE, KG, KP, KR, KZ, LC, LK, LR, LS, LT, LU, LV, MA, MD, MG, MK, MN, MW, MX, MZ, NI, NO, NZ, OM, PG, PH, PL, PT, RO, RU, SC, SD, SE, SG, SK, SL, SY, TJ, TM, TN, TR, TT, TZ, UA, UG, US, UZ, VC, VN, YU, ZA, ZM, ZW.
- (22) International Filing Date: 2 December 2003 (02.12.2003)
- (25) Filing Language: English
- (26) Publication Language: English
- (30) Priority Data: 60/431,833 9 December 2002 (09.12.2002) US (84) Designated States (*regional*): Eurasian patent (AM, AZ, BY, KG, KZ, MD, RU, TJ, TM), European patent (AT, BE, BG, CH, CY, CZ, DE, DK, EE, ES, FI, FR, GB, GR, HU, IE, IT, LU, MC, NL, PT, RO, SE, SI, SK, TR), OAPI patent (BF, BJ, CF, CG, CI, CM, GA, GN, GQ, GW, ML, MR, NE, SN, TD, TG).
- (71) Applicant (*for all designated States except US*): ADVANCED INTERCONNECT TECHNOLOGIES LIMITED [MU/MU]; c/o Valmet (Mauritius) Limited, 608 St. James Court, St. Denis Street, Port Louis (MU).
- (72) Inventors; and
- (75) Inventors/Applicants (*for US only*): MCKERREGHAN, Michael, H. [US/US]; 3028 Randy Lane, Farmers Branch, TX 75234 (US). ISLAM, Shafidul [US/US]; 3829 Lakedale Drive, Plano, TX 75025 (US). SAN ANTONIO, Rico [PH/ID]; Taman Duta Mas, Block A03-9, Batam, Island 29433 (ID).
- Published:  
— without international search report and to be republished upon receipt of that report
- For two-letter codes and other abbreviations, refer to the "Guidance Notes on Codes and Abbreviations" appearing at the beginning of each regular issue of the PCT Gazette.

(54) Title: PACKAGE HAVING EXPOSED INTEGRATED CIRCUIT DEVICE



(57) Abstract: A package (10) includes an integrated circuit device (12) having an electrically active surface (16) and an opposing backside surface (14). A dielectric molding resin (26) at least partially encapsulates the integrated circuit die and the plurality of electrically conductive leads (20) with the backside surface (14) and the plurality of electrical contacts (24) being exposed on opposing sides of the package (10). Features (30) are formed into electrically inactive portions of the integrated circuit die (12) to seal moisture paths and relieve packaging stress. The features (30) are formed by forming a trough (54) partially through the backside (56) of the wafer (40) in alignment with a saw street (48), the trough (54) having a first width; and forming a channel (62) extending from the trough (54) to the electrically active face (42) to thereby singulate the integrated circuit device member, the channel (62) having a second width that is less than the first width. (Drawing Figure 2)

WO 2004/053931 A2